July 23, 1946. H. F. LOEWER 2,404,508

LAST

Filed June 13, 1944 2 Sheets-Sheet 1

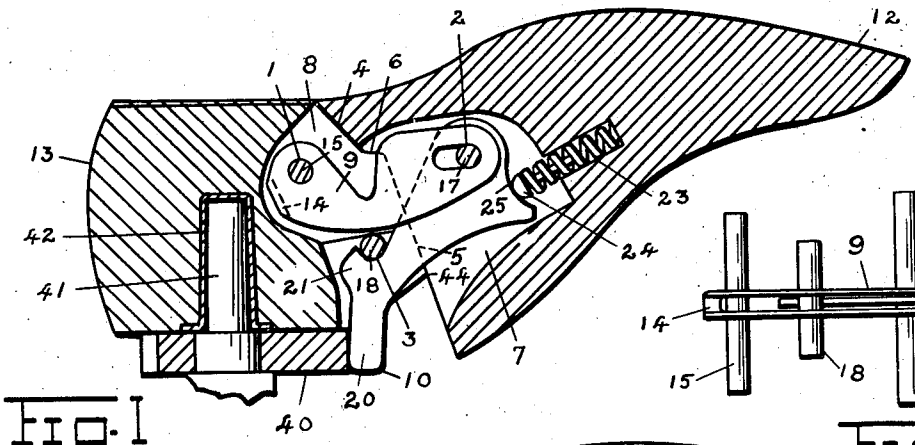


Fig. 1

Fig. 5

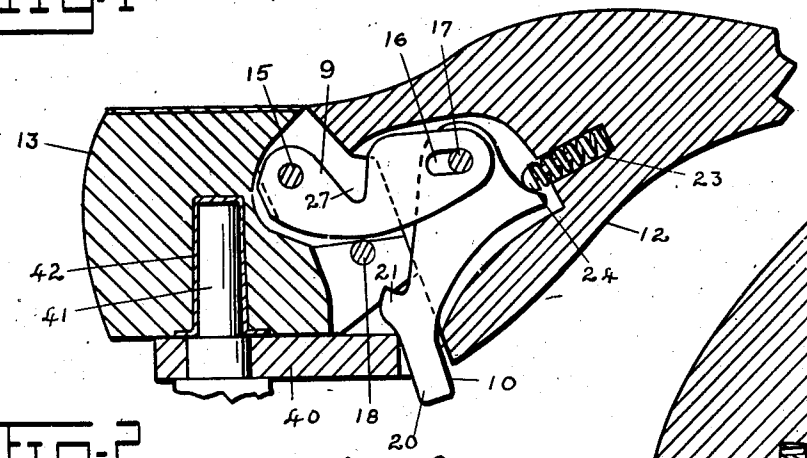


Fig. 2

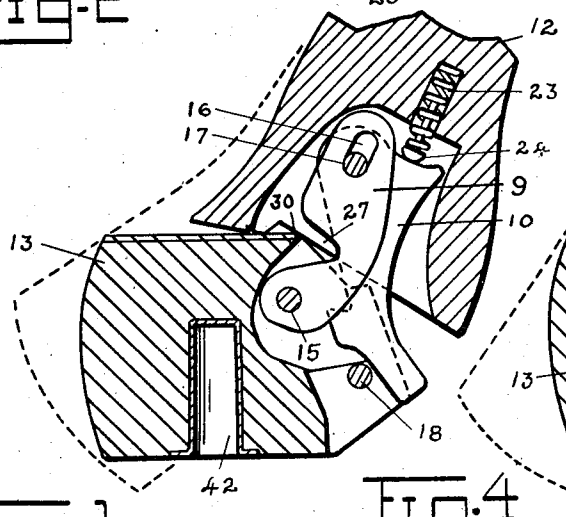


Fig. 3

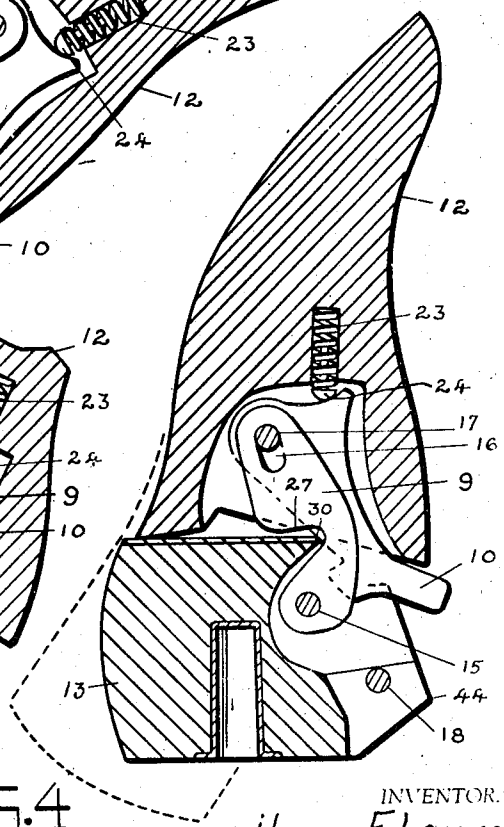


Fig. 4

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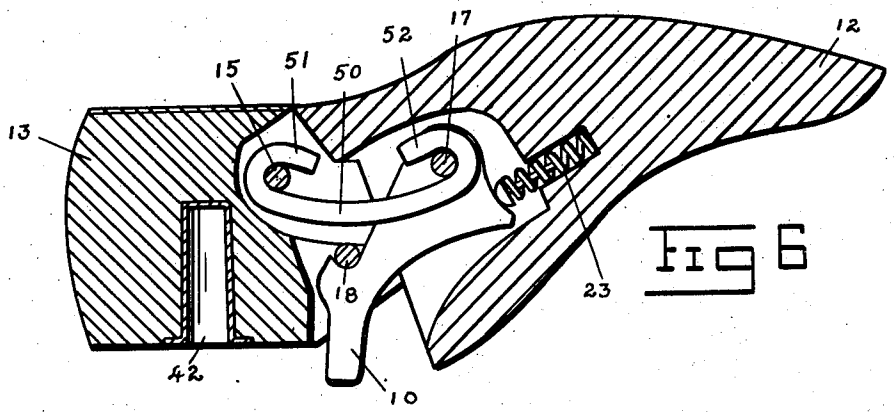


Fig 6

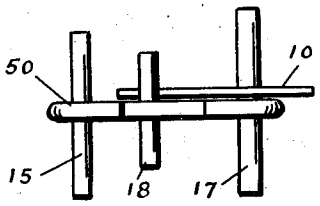


Fig. 9

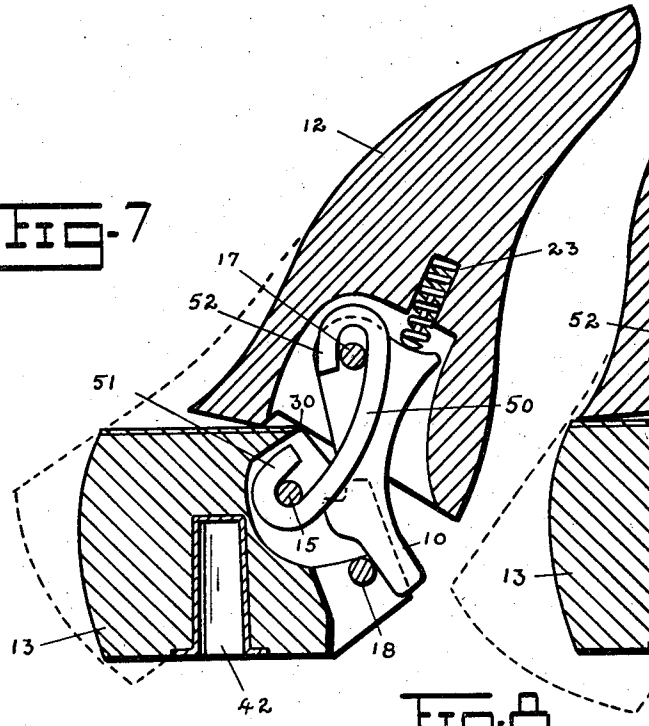


Fig. 7

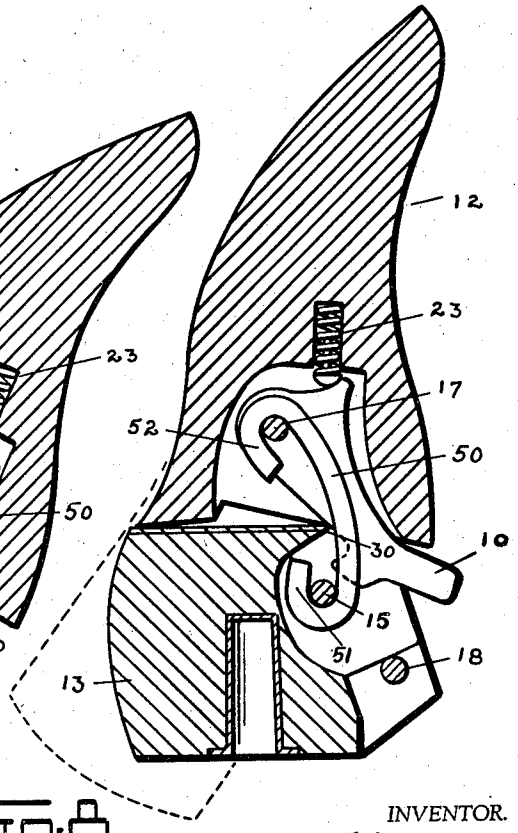


Fig. 8

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UNITED STATES PATENT OFFICE

2,404,508

LAST

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Application June 13, 1944, Serial No. 540,073

7 Claims. (Cl. 12—136)

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This invention relates to lasts and more particularly to the type of lasts which comprise two parts, mainly, the fore part and the heel part which are separate from each other except that they are connected together by a metal link.

One object of the invention is to connect the two parts by the link so that the one part will swing on a transverse pivot on the other part and shift its long axis through a large angle, the link and the parts being arranged to hold the two parts of the last in close relation to each other at all times.

Another object of the invention is to provide a locking device that will lock the two parts of the last firmly together when their axes are in line with each other.

Another object of the invention is to permit the two parts to be shifted in relation to each other so that they can be more easily inserted in and removed from the shoe or so that the shoe can be the more easily placed on the last or as it is said in the language of the trade "so that the shoe can be more easily relasted" without damage to the shoe.

These and other objects and features of the invention will be illustrated in the drawings, described in the specification and pointed out in the claims thereof.

Figure 1 is a longitudinal section through the last showing the locking device in locking position.

Figure 2 is a longitudinal section through the last with the parts in the same position as shown in Figure 1 except that the locking device is in unlocking position.

Figure 3 is a fragmentary sectional view showing the last in an intermediate collapsed position, the fore part of the last being shown partly broken away.

Figure 4 is a sectional view showing the last in its final collapsed position.

Figure 5 is a top plan view of an assembly of the link and the locking device and the three pins on which they are mounted, the last itself being omitted.

Figure 6 is a longitudinal section through the last showing a modified form of the link for holding the two parts of the last together, the locking device and the remaining parts of the last being identical with what is shown in Figure 1.

Figure 7 is a sectional view showing the last in the intermediate collapsed position.

Figure 8 is a sectional view showing the last in its final collapsed position.

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Figure 9 is a top plan view of an assembly of a link shown in Figure 6 and the locking device and the three pins on which they are mounted. the last itself being omitted.

In the drawings, like reference numerals indicate like parts.

This last is made by a process that is commonly used in the manufacture of wooden lasts. The wooden part of the last is turned to its final shape and is made from one piece of wood.

The three pin holes, 1, 2 and 3 are then bored in the last. The last is then sawed on the lines 4 and 5 and the heel and the fore parts of the last are then broken apart by causing the wood to be split along the grain and thereby form a horizontal deck or shelf 6 on each part of the last at this point, which shelf is from ⅛" to ¼" wide and extends across the last.

After the fore and heel parts of the last are broken apart, the recess 7 is cut or morticed into the fore part 12 of the last and the recess 8 is cut or morticed into the heel part 13 of the last by an apparatus that is in common use in many last factories and constitutes no part of my invention.

These mortices are cut into the two parts of the last to receive the link 9 and the locking device 10 and it will be understood that that part of the mortice in each case which receives the locking device 10 only will be narrower than that part of the mortice which received the link 9 for as shown in Figure 5 the link is wider than the locking device.

For the purpose of permanently holding the heel and fore parts of the last together I provide the link 9 which comprises two parallel plates as is shown in Figure 5 joined together at one end by a yoke 14, it being understood that this link is made all in one piece, and that the so-called parallel plates are bent on the yoke part to bring them into parallel relation with each other as is shown in Figure 5. At one end of the link is a round hole to receive the pin 15 and at the other end of the link is a slot 16 which is adapted to receive the pin 17. The long axis of this slot points toward the pin hole for the pin 15.

It will also be understood that the pin 15 is in the heel part of the last and the pin 17 is in the fore part of the last.

In the heel part of the last is also provided the pin 18 for the purpose that will now be described.

A locking device 10 is provided which locking device consists of a metal plate having a pin hole therein with which it swings on pin 17. This

plate is mounted to swing between the parallel plates comprised in the link 9 and it is therefore narrower than the link. It has a handle as indicated at 20 and on the under side of it, it is cut away to form a lug 21, leaving a recess between the lug and the intermediate part of the locking device.

As shown in Figure 1, the under surface of the lug 21 is cut substantially on a radius with the pin hole which engages the pin 17, so that the lug will make close engagement with and substantially lock itself on the pin 18 when the locking device is placed in the position shown in Figure 1.

In the fore part of the last is bored a hole 23 in which is placed a spring pressed pin 24. Against the head of this pin bears the cam surface 25 formed on the locking device. With the locking device 10 in the position shown in Figure 2, the pin is pressed into the recess, but when the locking device is placed in engagement with the pin 3, the pin is pushed out by the spring that surrounds it and helps to hold the locking device in locking position on the pin 18.

It will also be understood that the link 9 is cut away as indicated at 27 with a deep recess which extends beyond a line connecting the slot 16 and the hole occupied by the pin 15. This is for a purpose that will presently be described.

When the two parts of the last are placed in the intermediate collapsed position shown in Figure 3, this link swings toward the edge 30 on the heel part of the last and if the link were not cut away the movement of the link and the fore part of the last would be limited by this edge 30. But because the link is cut away to receive the edge 30 on the heel part of the last, the link and the fore part of the last can be swung up to the position shown in Figure 4 in which position the axis of the fore part of the last is nearly at right angles, with the axis of the heel part of the last.

This greatly shortens the distance between the back of the heel part of the last and the tip of the fore part of the last and makes it much easier to place the shoe on the last when in the position shown in Figure 4 after which the fore part is brought to the position shown in Figure 1 with the shoe placed fully in position thereon. It also makes it much easier to remove the shoe from the last and avoids any tearing or straining of the shoe either in placing the shoe on the last or in removing it therefrom. It will be remembered that the measurement around the contour of the heel of the last is much greater than the opening in the top of the shoe through which opening the heel of the last can pass easily without damage to the shoe when the heel is in the position shown in Figure 4, but the heel of the last would damage the shoe in passing through the opening if the toe were in the position shown in Figure 1.

It will also be understood that the deck or shelf 6 formed on each of the two parts of the last is nearly in line with the pin holes 1 and 2 and can be either slightly above or below the line. This position of the shelves makes it possible to shorten up the last when in the position shown in Figures 3 and 4 and it also makes it possible for the locking device 10 to draw the two parts of the last firmly together in fixed relation to each other one against the other independent of any holding effect of the link, all as shown in Figure 1.

With the parts of the last in the position shown in Figure 1, the decks or shelves 6 are much out

of line with the pins 17 and 18 and a little above the line connecting the pins 15 and 17. The shelves 6 and the two pins 17 and 18 are placed at the corners of a triangle. When the locking device 10 is moved to the position shown in Figure 1, the two shelves 6 are drawn firmly together, the one shelf on the other. Any tendency of the fore part of the last to rotate around the corner 44 is prevented by both the link 9 and the locking device 10. Any tendency of the fore part of the last to move toward the position shown in Figures 3 and 4 is prevented by the locking device 10. It will be understood that in certain operations in the making of the shoe a heavy heightwise pressure is exerted on the sole as in the laying or leveling of the sole, and any tendency to cause the two parts of the last to spread or otherwise move from the position shown in Figure 1 when such pressure is in the region of the joint is counteracted by the locking device, and shelf 6.

As shown in Figure 1 the heel part of the last rests on a cam plate 40 from which extends up an extension or jack post 41 into the hole 42 provided in the heel part of the last. By rotating the last about the post 41 the handle 20 of the locking device 10 may be caused to run out on a high part of the cam plate and be thereby moved into the unlocking position shown in Figure 2, after which the toe of the shoe and the fore part of the last can be swung up to the position shown in Figures 3 and 4, permitting the easy removal of the shoe from the last.

The post 41 is provided with a device 71 which enters the hole 42 in the heel part to grip the latter while the shoe is being placed on the last or removed therefrom, more especially while the shoe is being removed from the last.

In Figures 6, 7, 8 and 9 I have shown a last that is substantially the same as that shown in Figures 1 to 5 inclusive except that the link 50 is substituted for the link 9 shown in Figures 1 to 5 inclusive. It will be understood that the fore and heel part of the last and the pin holes and pins and latch 10 therein are the same as those shown in the preceding figures.

The link 50 is made of a single piece of wire first flattened and then bent to the form shown. The intermediate part of the link is bent to a curve, the radius of which is about 2¼ inches on the inside. The ends of the wire are bent over so that they extend substantially either parallel to or concentric with the intermediate portion of the link. The ends of the link are spaced from the intermediate part a little more than the diameter of the pins 15 and 17. The whole link is made about 2$\frac{11}{16}$ inches in length and about $\frac{5}{16}$ inch in width in its widest part. The open space inside of the link is about 2⅛ inches long and the gap between the ends of the link is about ¾ inch. The ends 51 and 52 of the link are made sufficiently long so that when the pins 15 and 17 are nearest together as is shown in Figure 7 the link cannot become disengaged from the pins.

The operation of placing the last on the jack post and unlocking the fore part of the last so that it can move from the position shown in Figure 6 to the position shown in Figures 7 and 8 are substantially the same as the operations above described in connection with Figures 1 to 5 inclusive. It will be understood that the curvature of the link 50 permits the link to function with regard to the edge 30 of the heel part of the last precisely the same as the link 9 functions with this edge by reason of its cut away portion or

deep recess indicated at 27 in the several figures referred to.

The locking device 10 releases and locks the two parts of the last in precisely the same way as heretofore described.

I claim:

1. A last having a heel part and a fore part divided by two planes connected by a narrow shelf placed near the sole of the last, each of said parts having an edge that meets in the sole of the last, a link connecting said heel part and said fore part, a pin in each part of the last with which said link engages, said link being recessed on the under side with a deep recess to receive the edge of the heel when the link and fore part of the last is swung below the heel part of the last.

2. A last having a heel part and a fore part divided by two planes connected by a narrow shelf placed near the sole of the last, each of said parts having an edge that meets in the sole of the last, a link connecting said heel part and said fore part, a pin in each part of the link with which said link engages, said link being recessed on the under side with a deep recess to receive the edge of the heel when the link and fore part of the last is swung below the heel part of the last, said edge of the heel part of the last being adapted to nest into the recess to permit the fore part of the last to swing to the end of its movement.

3. A last having a heel part and a fore part divided by two planes connected by a narrow shelf placed near the sole of the last, each of said parts having an edge that meets in the sole of the last, a link connecting said heel part and said fore part, a pin in each part of the last with which said link engages, said link being recessed on the under side with a deep recess to receive the forward edge of the heel part when the link and fore part are swung below the heel part of the last, said link being adapted to swing through an angle of 90°.

4. A last having a heel part and a fore part divided by two planes connected by a narrow shelf

placed near the sole of the last, each of said parts having an edge that meets in the sole of the last, a link connecting said heel part and said fore part, a pin in each part of the last with which said link engages, said link being recessed on the under side with a deep recess to receive the forward edge of the heel part when the link and fore part are swung below the heel part of the last, said link permitting the rear edge of the sole of the fore part to move far enough to make contact with the bottom of the heel part near the rear end thereof.

5. A last having a heel part and a fore part divided by two planes which planes are connected by a narrow shelf, a pin in each of said parts, a locking device pivotally mounted on the pin in the fore part of the last, a shoulder in said locking device, a pin in the heel part of the last with which said shoulder engages, said two pins and said shelf being connected by lines that form a triangle.

6. A last having a heel part and a fore part divided by two planes which planes are connected by a narrow shelf, a pin in each of said parts, a locking device pivotally mounted on the pin in the fore part of the last, a shoulder in said locking device, a pin in the heel part of the last with which said shoulder engages, said two pins and said shelf being connected by lines that form approximately a right angle triangle.

7. A last having a heel part and a fore part divided by two planes connected by a narrow shelf placed near the sole of the last, each of said parts having an edge that meets in the sole of the last, a link connecting said heel part and said fore part, a pin in each part of the last with which said link engages, the heel part and the fore part being angularly movable about the axes of said pins, respectively, and said link being recessed on the underside with a deep recess to permit the forward edge of the heel part to move across a line connecting said axes when the last is collapsed.

HENRY F. LOEWER.